

Mission Services Projects



STS-103/HST SM-03 Flight Readiness Review

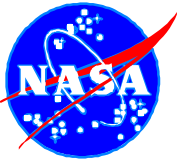
Agenda

Networks

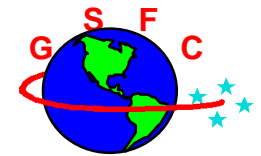


- Integrated Network
- Ascent/Entry Support
- TDRSS Constellation
- Significant Changes
- STS-93 Network Problems
- Configuration Management
- Critical Periods

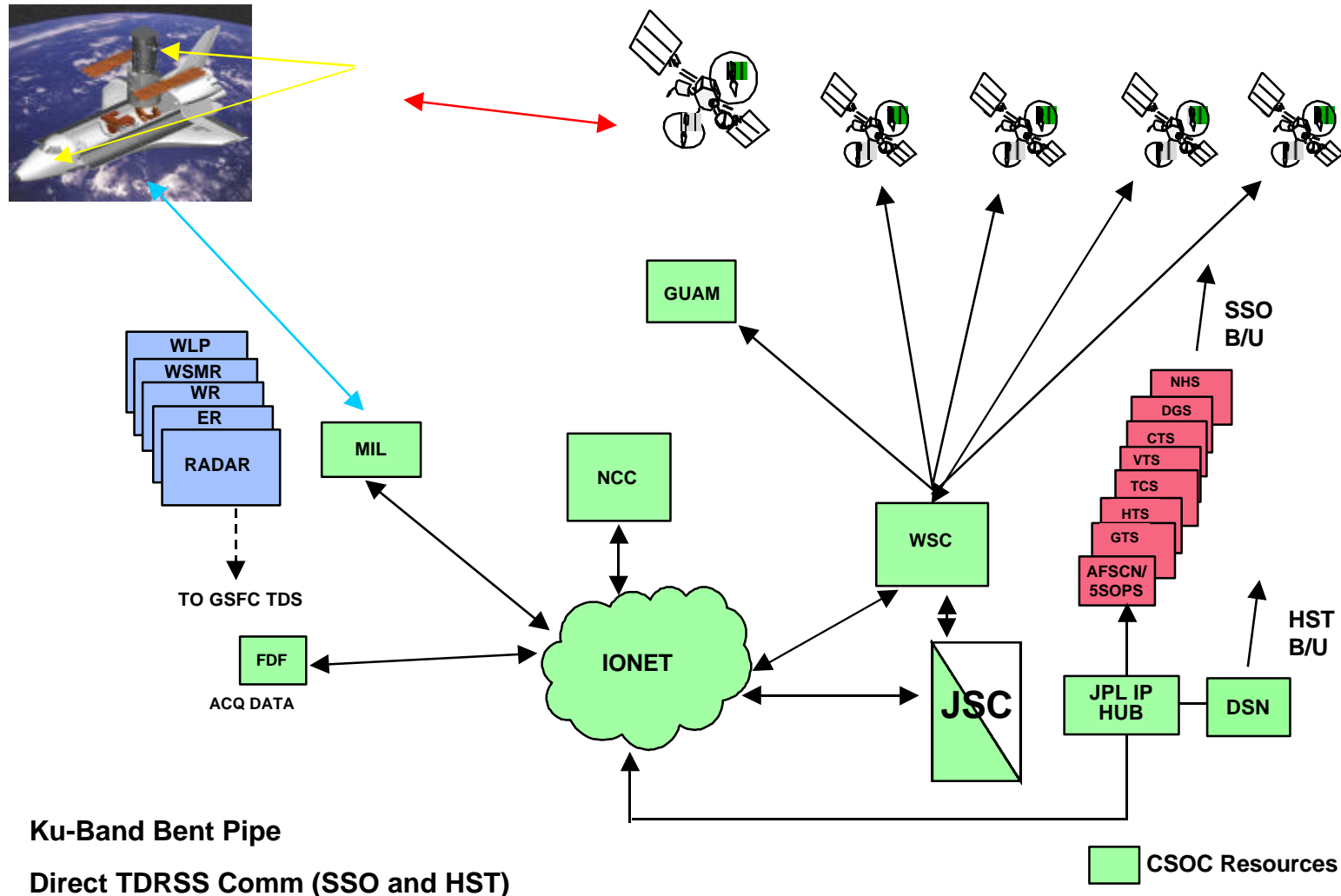
Gary A. Morse
GSFC/Networks
November 1999

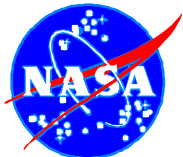


STS-103 FRR Networks



STS-103/HST SM-3 Integrated Network

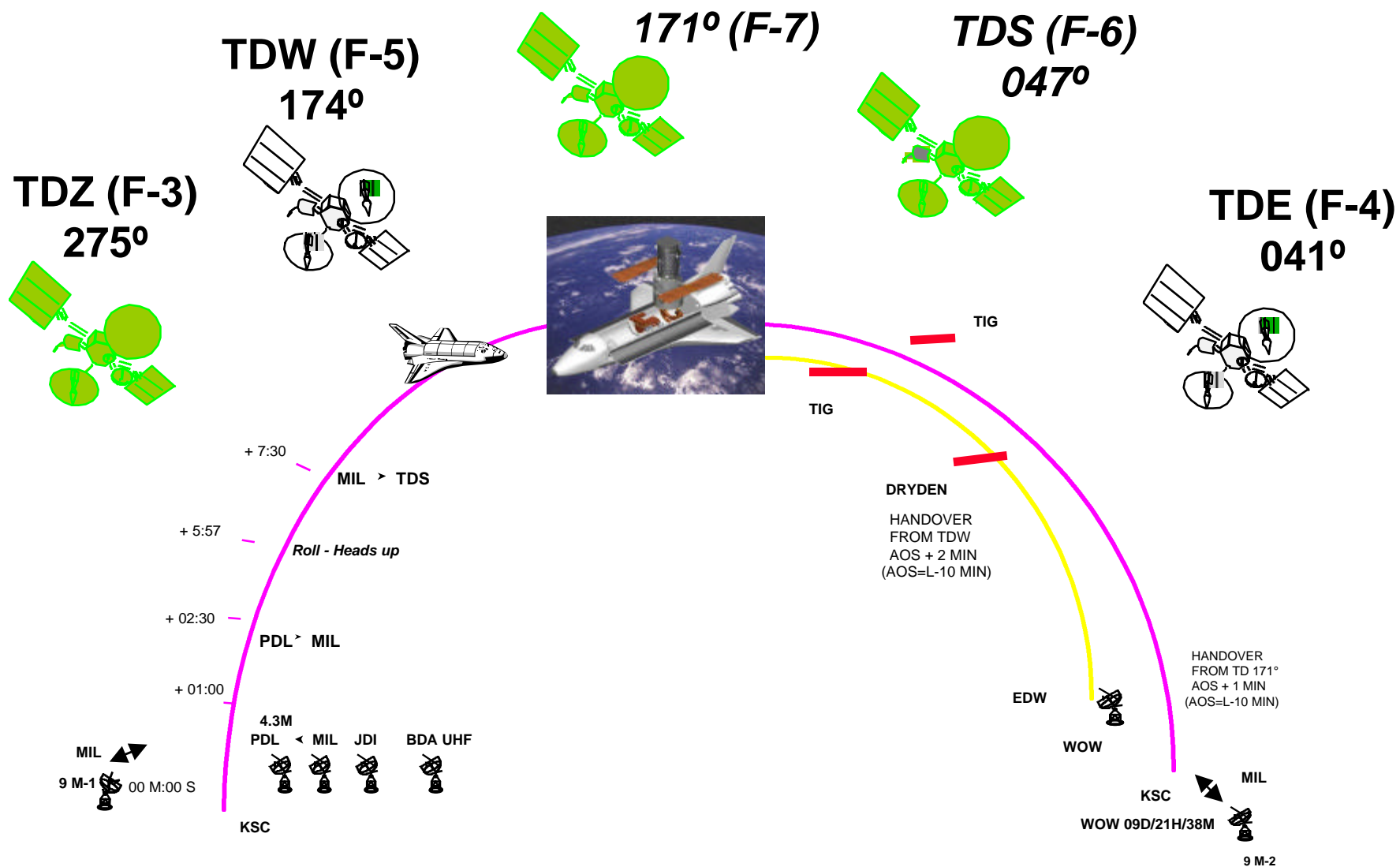


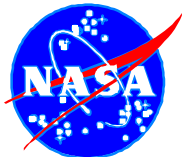


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Ascent/Entry Support

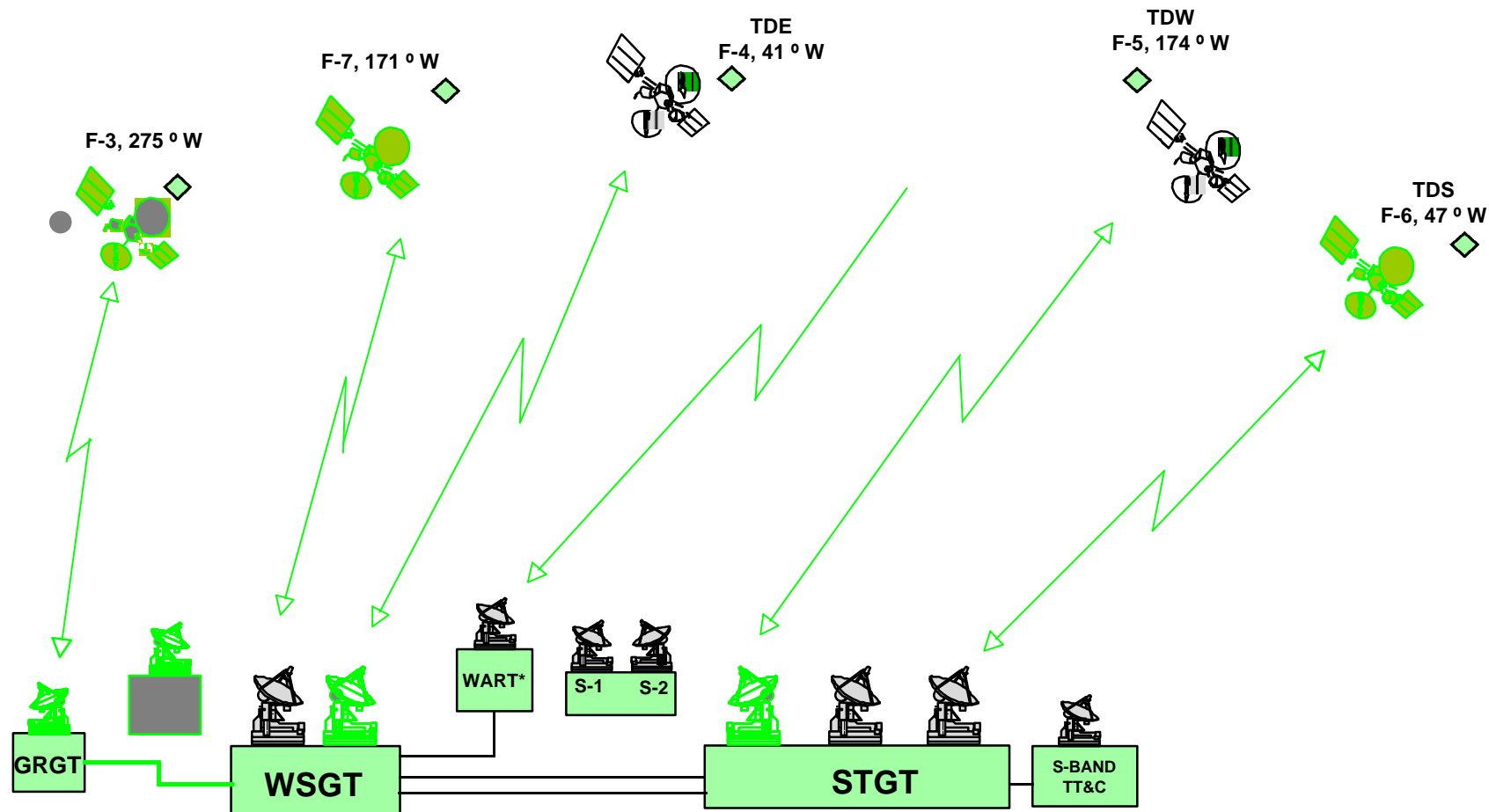




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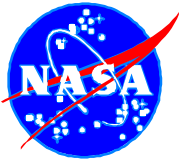


TDRSS Constellation



● NOT AVAILABLE FOR SUPPORT
● AVAILABLE ON-ORBIT AT INCO DISCRETION

◆ OPERATIONAL

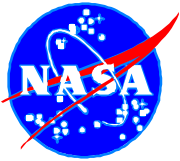


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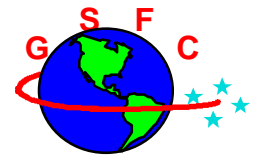


Significant Changes

- **Ground Network**
 - **MILA (MBR)**
 - **Installed faster CPU's in workstations and servers**
 - **Installed SSM computer and L-Time**
 - **Improved Workstation Overview Screens for launch and on-orbit**
 - **Added Workstation Overview Screen for landing**
 - **Delivered new driver for Command Subsystem to improve NCPS Performance**

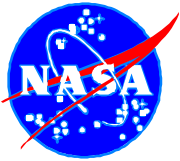


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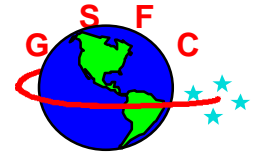


Significant Changes

- **Ground Network**
 - **BDA/MILA Dial-up Capability**
 - BDA dedicated circuits for shuttle have been terminated
 - Four dial-up circuits presently exist
 - New hardware and modified phone configuration will provide four active circuits for support
 - 1 A/G Voice Prime
 - 1 Acquisition Data Prime
 - 1 A/G Voice/Acquisition Data Backup
 - 1 Voice (Site Coord)
 - Testing and procedures development is on-going

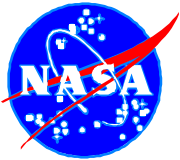


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Significant Changes

- **Space Network**
 - **WSC**
 - **Software 99003 delivered August 1999 at both WSGT and STGT**
 - Provides scheduling enhancements for future missions
 - **Firmware delivery 9903 at both WSGT and STGT**
 - Scheduling enhancements for future missions
 - **Firmware delivery 9904 delivery at both WSGT and STGT**
 - Formalizes ETNs currently in the system
 - **ETN 343 corrected a range zero set anomaly with 99003 software delivery**
 - **WSC diverse fiber installation completed early September 1999**
 - Failover tests were successful
 - Additional failover testing will be performed during SNORT

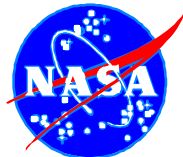


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Significant Changes

- **Space Network**
 - **Network Control Center Software (NCC)**
 - **NCC 99.1 (Patch 8)**
 - **Corrected auto-throughput vector epoch time ordering**
 - **Successfully tested**
- **Eastern Range**
 - **KMRC and KMLC administratively down, due to annual visit of the local population (November 21, 1999 - January 1, 2000)**

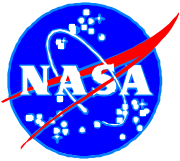


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STS-93 Network Problems

- **STS-93 Anomalies/Resolution were presented to the PRCB on October 22, 1999. The following items were presented with resolution**
 - **WSC Scheduling Anomaly**
 - **MIL/PDL Command Problem**
 - **MIL Forward Link Anomaly**
 - **MIL UHF A/G Anomaly**
 - **BDA UHF A/G Anomaly**
 - **SSME RPS Anomaly**
 - **DFRC Return Link Anomaly**

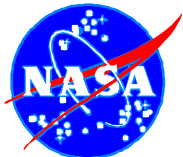


STS-103 FRR Networks



Configuration Management

- **Hardware/Software Freeze**
 - Integrated networks freeze will be imposed prior to the Space Network Verification/Validation or launch minus 7 days; whichever comes first
 - Exemptions are approved by the Network Director
- **Critical Period Restrictions**
 - Critical periods have been identified
 - Maintenance and testing restrictions are imposed on Space and Ground Network elements during critical mission periods



STS-103 FRR Networks



Critical Periods

Event	Met	Orbit	Duration
Launch (12/02/99-4:42 AM EST)			
Oms-2			
Ku-Band Activation			
HST Rendezvous	01/17:30:00	27 - 31	
HST Grapple (FD3)	02/00:33:00	31	
EVA #1 (FD4)	02/18:30:00	43 - 47	6 Hours
EVA #2 (FD5)	03/19:00:00	58 - 62	6 Hours
EVA #3 (FD6)	04/19:00:00	73 - 76	6 Hours
EVA #4 (FD7)	05/19:00:00	88 - 91	6 Hours
HST Release (FD8)	06/21:15:00	104	
Ku-Band STOW	09/01:0000	136	
De-Orbit TIG	09/20:26:00	148	
Landing	09/21:38:00	149	

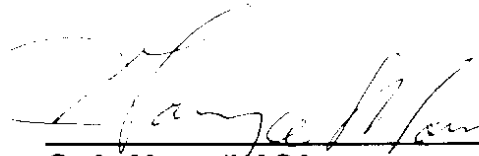


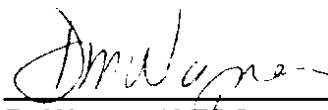
Critical Period

Goddard Space Flight Center

Certificate Of Flight Projects Directorate Networks Readiness

***This is to certify that with successful completion
of flight readiness preparations and
closure of associated action items,
all CSOC service elements are ready to support
the STS-103/HST-SM-03 Mission.***


G. A. Morse/NASA
Space Shuttle
Network Director
Date 11/3/99


D. Wagner/ATSC
GSFC CSOC Site
Manager
Date 11/3/99

Goddard Space Flight Center

Certificate Of Flight Projects Directorate Networks Readiness

This is to certify that with successful completion of flight readiness preparations and closure of associated action items, all integrated networks and CSOC elements are ready to support the STS-103/HST-SM-03 Mission.

Dennis Dillan 11/3/99
for W. Mack/NASA Date
Office of Flight
Assurance

Robert Harris
J.Z. Walker/NASA Date
GSFC Center Mission
Services Manager

R. Flaherty 11/3/99
R. Flaherty/NASA Date
Space Network
Project

Angela Moore 11/3/99
T. Sobchak/NASA Date
Space Shuttle
Networks Test Manager

W. Watson 11/3/99
W. Watson/NASA Date
GSFC Center Data
Services Manager

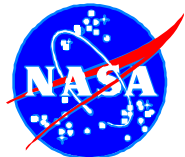
DM Wagner 11/3/99
D. Wagner/NASA Date
GSFC CSOC Site
Manager

G. A. Morse 11/3/99
G. A. Morse/NASA Date
Space Shuttle
Network Director

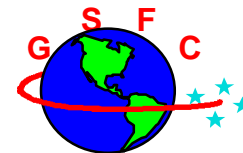
J. McKee 11/3/99
J. McKee/DFRC Date
Center Mission
Services Manager

S. Currier 11/3/99
S. Currier/NASA Date
Ground Network
Project

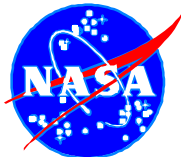
R. Helmick 11/3/99
R. Helmick/NASA Date
WAN Manager



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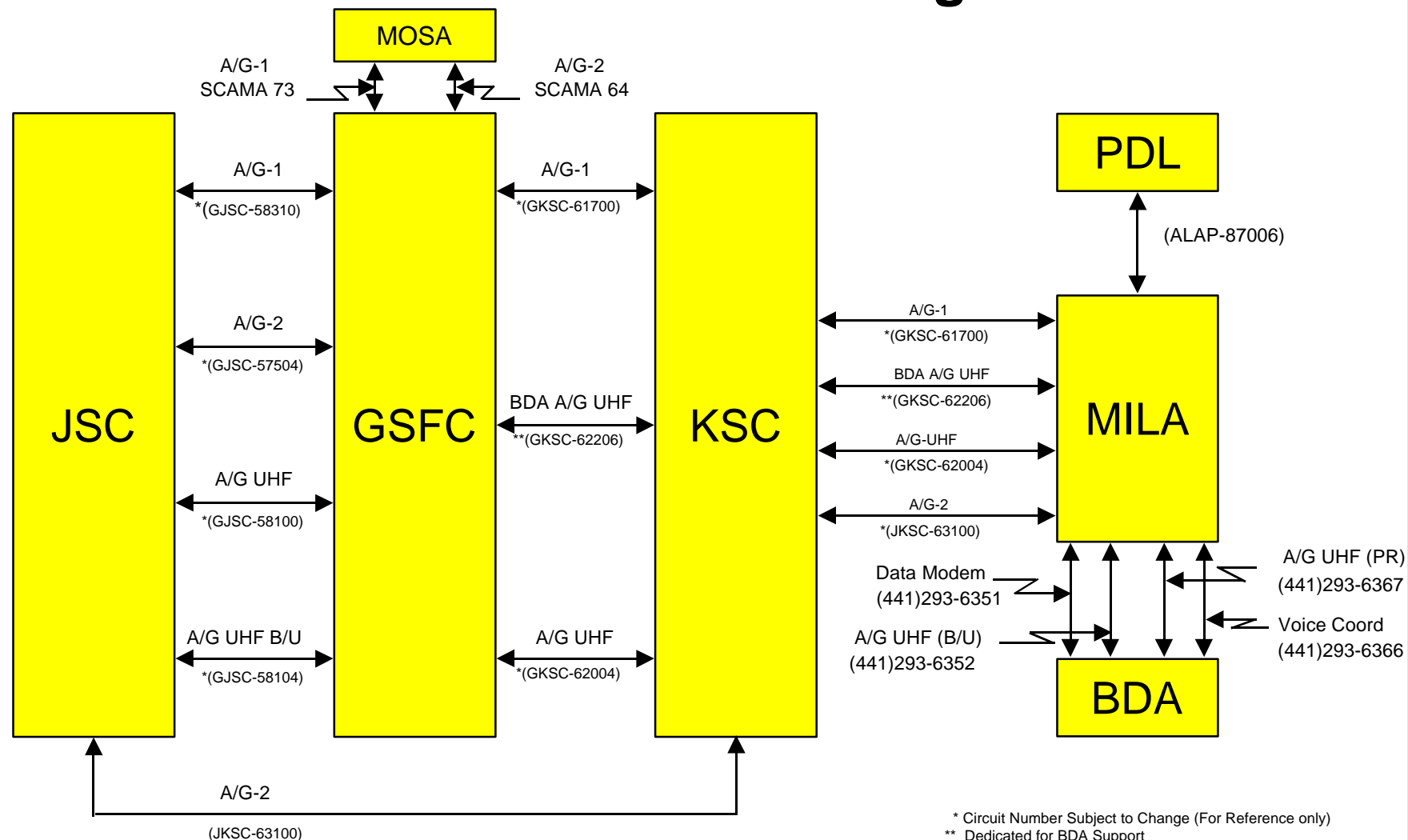
Backup

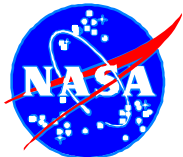


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MILA/BDA/PDL AGVS Configuration

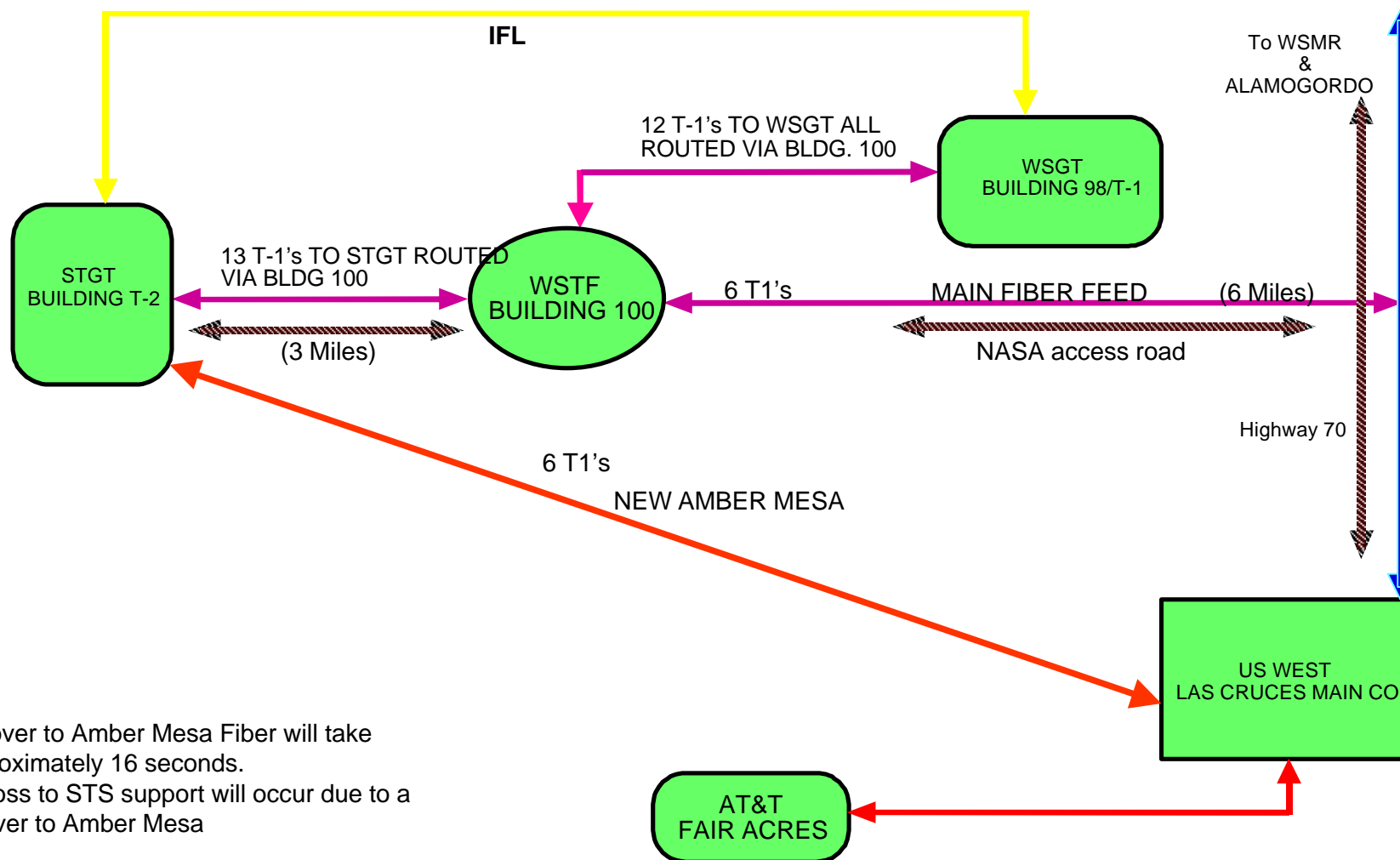




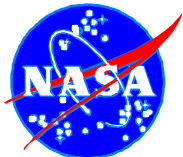
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NASA Complex Carrier Fiber Configuration Post 6 T-1 Cutover to Amber Mesa Fiber



Failover to Amber Mesa Fiber will take approximately 16 seconds.
No loss to STS support will occur due to a failover to Amber Mesa



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Post-Launch Playbacks

